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Revision 5

Health and Safety Plan for the Operable Unit 7-13/14 Integrated Probing Project

B. P. Miller

February 2003

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Idaho National Engineering and Environmental Laboratory
Environmental Restoration Program
Idaho Falls, Idaho 83415

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Approved **by**

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2/6/03
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ABSTRACT

This health and safety plan establishes the procedures and requirements that will be used to eliminate or minimize health and safety hazards to persons conducting OU 7-13/14 integrated probing project activities in the Subsurface Disposal Area of the Radioactive Waste Management Complex, as required by the Occupational Safety and Health Administration Standard, “Hazardous Waste Operations and Emergency Response” (29 CFR 1910.120/1926.65). It contains information about the hazards involved in performing the work as well as the specific actions and equipment that will be used to protect personnel who work at the task site.

The OU 7-13/14 integrated probing tasks are being conducted to gather data to support the OU 7-13/14 remedial investigation/feasibility study. Activities will involve installation and sampling of probes placed in transuranic mixed waste. Specialized engineering, work procedures, and administrative controls have been developed to isolate sources of contamination from personnel performing intrusive activities into the buried waste at the SDA. Monitoring of the area and personnel who conduct probing in the SDA will be conducted for radiological and nonradiological contaminants. Specific action levels for both types of contaminants have been established.

In addition, emergency response planning and actions are described for various contingencies during the OU 7-13/14 integrated probing activities. Both project site and offsite emergency situations are discussed.

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FIGURES

TABLES

ACRONYMS

ALARA	as low as reasonably achievable
anti-C	anti-contamination
APF	assigned protection factor
ARDC	Administrative Record and Document Control
BBWI	Bechtel BWXT Idaho, LLC
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFA	Central Facilities Area
CFR	*Code of Federal Regulations*
COCA	Consent Order and Compliance Agreement
CRC	contamination reduction corridor
CRZ	contamination reduction zone
CTP	Cold Test Pit
dBA	decibel A-weighted
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
EC	emergency coordinator
EDF	engineering design file
EPA	U.S. Environmental Protection Agency
ER	environmental restoration
ERO	Emergency Response Organization
ERP	Environmental Restoration Program
ESH&QA	environment, safety, health and quality assurance
EZ	exclusion zone
FPE	fire protection engineer
FR	*Federal Register*

FSP	field sampling plan
FTL	field team leader
HASP	health and safety plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEG	homogeneous exposure group
HEPA	high-efficiency particulate air
HSO	health and safety officer
ICS	Incident Command System
IDLH	immediately dangerous to life or health
IDW	investigation-derived waste
IE	ionization energy
IH	industrial hygienist
INEEL	Idaho National Engineering and Environmental Laboratory
ISMS	Integrated Safety Management System
JSA	job safety analysis
LN2	liquid nitrogen
MCP	management control procedure
NIOSH	National Institute of Occupational Safety & Health
NPL	National Priorities List
OCVZ	organic concentration in the vadose zone
OMP	Occupational Medical Program
OSHA	Occupational Safety and Health Administration
OU	operable unit
PCM	personal contamination monitor
PHA	preliminary hazards assessment
PM	project manager

POD	plan-of-the-day
PPE	personal protective equipment
PRD	program requirements document
QAPjP	Quality Assurance Project Plan
QPP	quality program plan
RadCon	radiological control
RBA	radiological buffer area
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician
RE	radiological engineer
RFP	Rocky Flats Plant
RI/FS	remedial investigation/feasibility study
RMA	Radioactive Material Area
ROD	Record of Decision
RW	radiological worker
RWMC	Radioactive Waste Management Complex
RWP	radiological work permit
SCBA	self-contained breathing apparatus
SDA	Subsurface Disposal Area
SIA	staged interim action
SP	safety professional
SRPA	Snake River Plain Aquifer
SS	shift supervisor
SWP	safe work permit
SZ	support zone
TAN	Test Area North

TLD	thermoluminescent dosimeter
TLV	threshold-limit value
TPR	technical procedure requirement
TRA	Test Reactor Area
TRAIN	Training Records and Information Network
TRU	transuranic
TWA	time-weighted average
VOC	volatile organic compound
VPP	Voluntary Protection Program
WAG	waste area group
WBGT	wet bulb globe test
WCC	Warning Communications Center
WERF	Waste Experimental Reduction Facility

Health and Safety Plan for the Operable Unit 7-13/14 Integrated Probing Project

1. INTRODUCTION

This health and safety plan (HASP) establishes the procedures and requirements that will be used to eliminate or minimize health and safety hazards to persons conducting Operable Unit (OU) 7-13/14 integrated probing project tasks at the Radioactive Waste Management Complex (RWMC) Subsurface Disposal Area (SDA). Probes are being installed and sampled to gather data in support of the OU 7-13/14 remedial investigation/feasibility study (RI/FS).

This HASP meets requirements of the Occupational Safety and Health Administration (OSHA) standard, 29 Code of Federal Regulations (CFR) 1910.120/1926.65, "Hazardous Waste Operations and Emergency Response (HAZWOPER)." Its preparation is consistent with information found in the National Institute of Occupational Safety and Health (NIOSH)/OSHA/United States Coast Guard/Environmental Protection Agency (EPA) *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (NIOSH 1985); Idaho National Engineering and Environmental Laboratory (INEEL) safety and health manuals; *INEEL Emergency Plan/Resource Conservation and Recovery Act (RCRA) Contingency Plan* (42 USC § 6901 et seq.); and INEEL radiological control and radiological protection procedures.

A safety assessment for the OU 7-13/14 integrated probing activities has been written to evaluate potential accident and consequence scenarios, and OU 7-13/14 integrated probing activities addressed in this HASP have been evaluated through the unreviewed safety question safety evaluation screening process as defined in the *RWMC Safety Analysis Report (SAR)* (INEEL 2000a). Accordingly, probing activities fall within the RWMC safety authorization basis (the RWMC SAR) as defined by the U.S. Department of Energy (DOE) Order 5480.23, "Nuclear Safety Analysis Reports."

This HASP governs all work performed at OU 7-13/14 probing task sites by employees of Bechtel BWXT Idaho, LLC (BBWI), subcontractors to the BBWI, and other personnel who perform specific activities in support of the project at the OU 7-13/14 project locations. This HASP has been reviewed and approved by the OU 7-13/14 health and safety officer (HSO) in conjunction with the field team leader (FTL), project manager (PM), and necessary Environmental Restoration (ER) and RWMC environmental, safety, health, and quality professionals to ensure the effectiveness and suitability of this HASP for probing activities.

1.1 Idaho National Engineering and Environmental Laboratory Site Description

The INEEL, formerly the National Reactor Testing Station (NRTS), encompasses 2,305 km^2 (890 mi^2), and is located approximately 58 km (34 mi) west of Idaho Falls, Idaho (see Figure 1-1). The United States Atomic Energy Commission, now the DOE, established the National Reactor Testing Stations in 1949 as a site for building and testing various nuclear facilities. The INEEL has also been the storage facility for transuranic (TRU) radionuclides and low-level radioactive waste since 1952. At present, the INEEL supports the engineering and operations efforts of DOE and other federal agencies in areas of nuclear safety research, reactor development, reactor operations and training, nuclear defense materials production, waste management technology development, and energy technology and conservation programs. The DOE Idaho Operations Office (DOE-ID) has responsibility for the INEEL, and designates authority to operate the INEEL to government contractors. Bechtel BWXT Idaho, LLC, the current primary contractor for DOE-ID at the INEEL, provides managing and operating services to the majority of INEEL facilities.

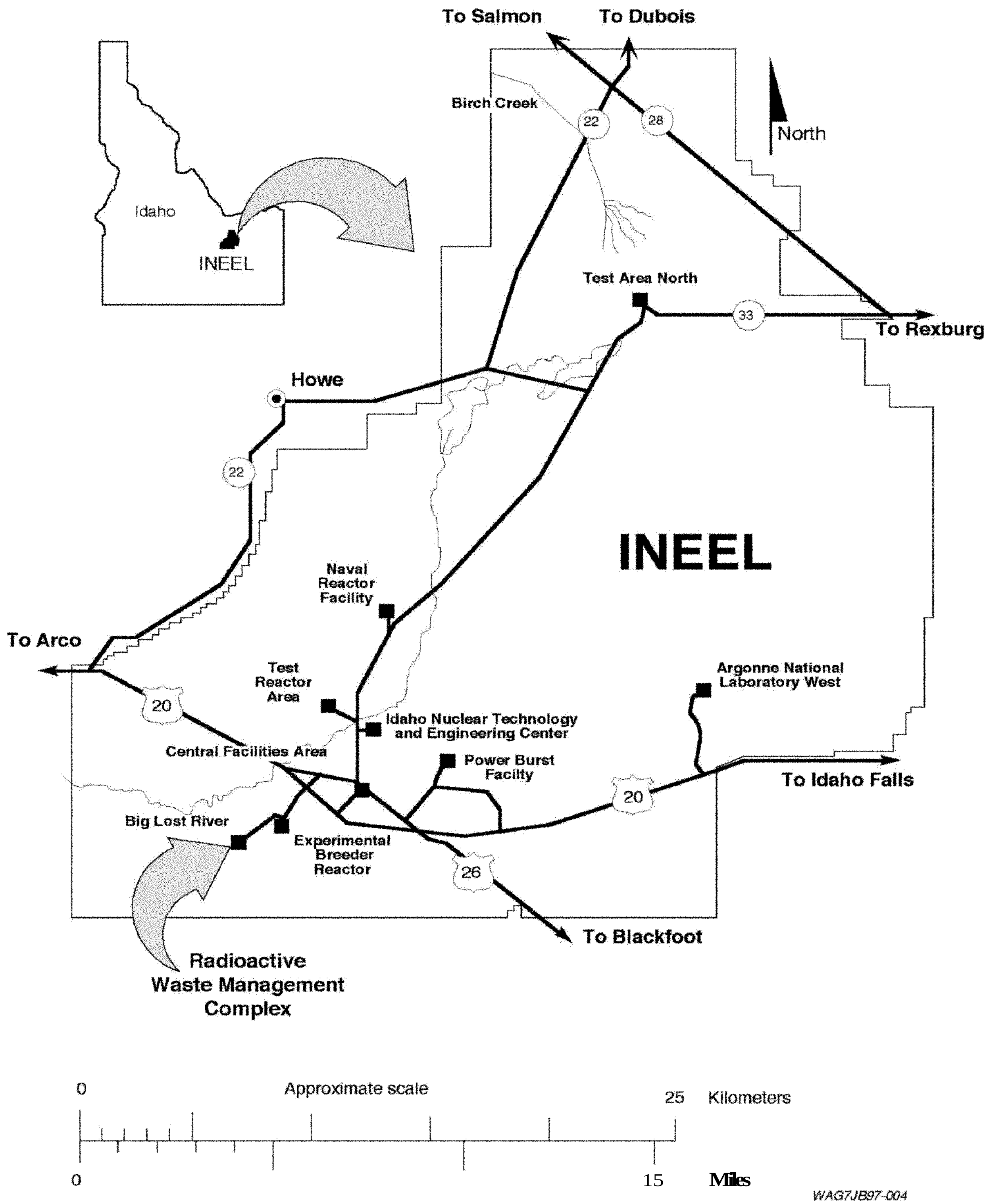

Figure 1-1. Map of the Idaho National Engineering and Environmental Laboratory Site.

A Consent Order and Compliance Agreement (COCA) entered into between DOE and the EPA, pursuant to RCRA, Section 3008(h), in August 1987 (DOE-ID 1987), required DOE to conduct an initial assessment and screening of all solid waste and hazardous waste disposal units at the INEEL and set up a process to conduct any necessary corrective actions. On July 14, 1989, the INEEL was proposed for listing on the National Priorities List (NPL) (54 FR 29820). EPA proposed the listing under the authorities granted by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 USC § 9601 et seq.). The final rule that listed the INEEL on the NPL was published on November 21, 1989 (54 FR 48184). As a result of having the INEEL on the NPL list, DOE, EPA, and the Idaho Department of Health and Welfare entered into the Federal Facility Agreement and Consent Order (FFA/CO) on December 9, 1991 (DOE-ID 1991).

Under the FFA/CO, the INEEL is divided into 10 waste area groups (WAGs). The WAGs are hrther subdivided into OUs. The RWMC has been designated WAG 7 and consists of 14 OUs. Operable Unit 7-13/14 is the combined scope and schedule for the OU 7-13 TRU pits and trenches RI/FS and the OU 7-14 comprehensive RI/FS for WAG 7. Additional probing tasks may be performed at the OU 7-10 (i.e., Pit 9) project site under this HASP.

1.2 Radioactive Waste Management Complex Site Description

The RWMC was established in the early 1950s as a disposal site for solid, low-level waste generated by INEEL operations. The RWMC is located in the southwestern portion of the INEEL, as shown in Figure 1-1. Within the RWMC is the SDA (35.6-ha [88-acre]) where radioactive waste materials have been buried in underground pits, trenches, soil vault rows, one aboveground pad (Pad A), and the TRU Storage Area (TSA), where interim storage TRU waste is kept in containers on asphalt pads. Transuranic waste was disposed of in the SDA from 1952 to 1970. Rocky Flats Plant (RFP) TRU waste was received for disposal in the SDA from 1954 through 1970. The RFP is a DOE-owned facility located west of Denver, Colorado, that was used primarily for producing components for nuclear weapons.

Subsurface monitoring at the RWMC, which determined whether radionuclides or other hazard contaminants had migrated into the subsurface, began in the early 1970s and is ongoing. Analytical results indicate that minute amounts of human-made radionuclides have migrated from the SDA toward the Snake River Plain Aquifer. An independent review of all analytical data from core drilling in the basalt below the SDA supports the conclusion that americium (Am)-241, cobalt (Co)-60, plutonium (Pu) -238, Pu-239, and Pu-240 are present in the clay/soil interbed sediments 33.5 m (110 ft) below the surface. The results of the data analyses do not support the presence of human-made radioisotopes either in the discontinuous interbed at 9.1 m (30 ft) below ground level, or the clay/soil interbed sediments at 73.2 m (240 ft) below ground level (Smith and Kudera 1996).

Major studies used to develop the RI/FS rationale for WAG 7 are summarized in the WAG 7 RI/FS Work Plan (Becker et al. 1996). A description of each OU within WAG 7 includes a summary of the Federal Facility Agreement and Compliance Order assessments (DOE-ID 1991) using Track 1, Track 2, RI/FS, and interim action methodologies. The WAG 7 data gaps and their associated resolutions are also tabulated. Historical investigations also are referenced and summarized in the Interim Risk Assessment (IRA) report (Becker et al. 1998).

1.3 Task Site Description

The *Addendum to the Work Plan for the OU 7-13/14 Waste Area Group 7 Comprehensive Remedial Investigation/Feasibility Study* (DOE-ID 1998) selected earthen waste disposal Pits 4 and 10 as the principle locations to install and log cased probeholes (Type A) (see Figure 1-2). The addendum also included collecting samples from Type-B probes (instrumented probes). Based on inventory record reports, shipping manifests, and disposal records, these are the most probable locations of contaminants of potential concern associated with RFP waste and sludge (DOE-ID 1998). Pit 6 was chosen as an alternative location for these activities. Therefore, this HASP includes Pit 6 as one of the OU 7-13/14 integrated probing task sites. Pit 6 will be investigated only if insufficient data are collected from Pits 4 and 10. In addition, this HASP also addresses OU 7-10 (Pit 9) probing. In addition to these locations, Type A and B probes will be installed in Trenches 3, 22, 24, 47, 54, Pit 5, Soil Vault Row 17, and the areas between Pits 1, 2, an 3.

Historical records and the average 1.53-km (5,010-ft) surface elevation inside the SDA were used to estimate the depths to basalt for the SDA. The depths to basalt inside Pits 4, 6, and 10 were estimated to range from 3 to more than 5.5 m (10 to more than 18 ft) (DOE-ID 1998). The periods of operation, surface areas, volumes, and approximate depth to basalt for the selected pits are given in Table 1-1.

Initially, each pit was excavated to the basalt bedrock, and approximately 1.1 m (3.5 ft) of soil was placed on the bedrock before the waste was placed into the pit. While these pits were operational, drums and boxes generally were dumped in the pits by truck or bulldozer and large items were placed in by crane. Soil cover was applied over the waste after daily or weekly operations, depending on required procedures at time of disposal. After the waste was placed in a pit, the pit was backfilled with another layer of soil. The INEEL estimates approximately 1.8 m (6 ft) of clean soil overburden is located on top of the buried waste.

The inventory of contaminants in these pits is based on available shipping records, process knowledge, written correspondence, and the Radioactive Waste Management Information System. The east end of Pit 4 has the highest organic vapor concentrations based on soil gas survey data (EG&G 1992). A review of the shipping records indicates that over 10 shipments of Series 740 RFP sludge, totaling 600 drums, were disposed of in the east end of Pit 4. Pit 6 also received Series 740 RFP sludge.

The waste in Pit 9 is primarily TRU waste (more than 10 nCi/g) generated at the RFP, with additional low-level waste and other miscellaneous waste from generators at the INEEL (DOE-ID 1998). Approximately 3,115 m^3 (110,000 ft') of the waste buried in Pit 9 was generated at the RFP and consisted of (1) drums of sludge (contaminated with a mixture of TRU elements and organic solvents), (2) drums of assorted solid waste, and (3) wooden/cardboard boxes containing empty contaminated drums. Buried at the site were (1) 3,937 drum containers, (2) 2,452 boxes (of which 1,471 boxes contain empty contaminated drums), and (3) 72 unspecified containers of waste (DOE-ID 1993). The boxes generally were disposed of at the north end of the pit and the drums generally were dumped in the south end, although intermixing of containers in the pit did occur as a result of pit flooding in 1969.

Pit 10 documentation contains the most inclusive shipping records of the selected pits. The records indicate that approximately 500 drums containing Series 740 sludge from RFP were shipped between September 18, 1968, and October 18, 1968. The burial location of these Series 740 drums in Pit 10 also corresponds to the lowest area of soil gas concentrations in the pit. Pit 10 was selected as the ideal pit for these activities because Series 741 and Series 742 sludge from RFP were potentially present.

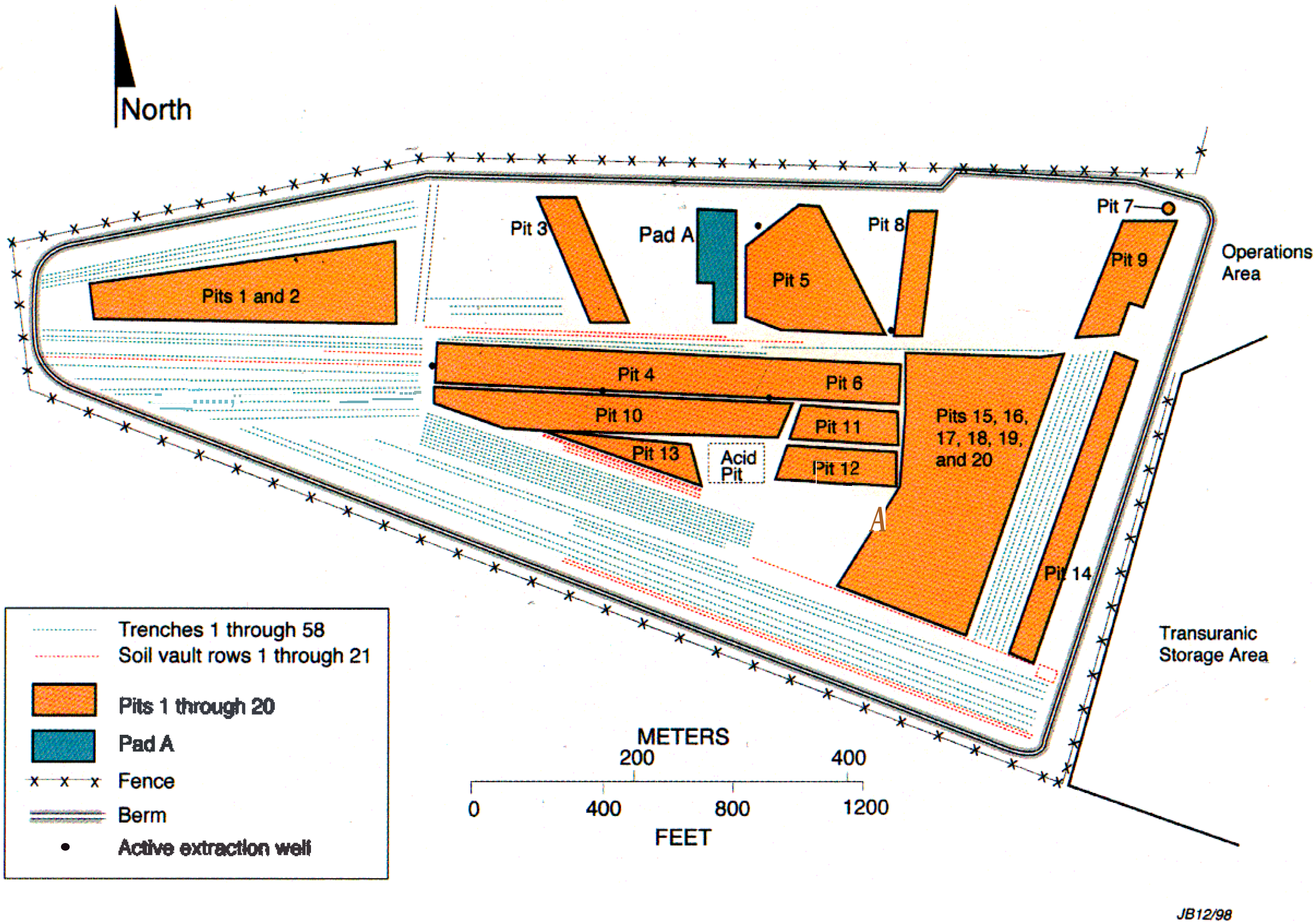

Figure 1-2. Map of the Subsurface Disposal Area (Pits 4, 6, 9 and 10) at the Radioactive Waste Management Complex.

Table 1-1. Specifications for selected pits.

Pit	Period of Operation (Approximate)	Surface Area[a]	Volume[a] (ft^3)	Depth (ft) to Basalt (Approximate)
4	January 1963–September 1967	111,732	1,581,284	10 to 18
6	May 1967–October 1968	54,984	780,773	10 to 18
9	November 1967–June 1969	43,560	750,000	10 to 20
10	June 1968–July 1971	111,732	1,586,594	10 to 18

a. Becker et al. (1998).

Records indicate that only about 12% of the total sludge shipped contained Series 743 sludge. Pit 10 also received two shipments containing over 4.5 t (5 tons) (i.e., 1.6 Ci) of depleted uranium. Two co-located shipments of Pu/Am, both with high Pu content and a high density for the Pu disposed (Ci/total volume), are located in Pit 10. Shipping records indicate a total of 58,954 g (130 lb) of Pu (i.e., 3,661 g [8 lb] Ci) and 5,072 g (11 lb) of Am (i.e., 17,280 Ci) disposed of in Pit 10.

The TRU radionuclides Pu-238, Pu-239, Pu-240, Pu-241, Am-241, and neptunium (Np)-237 compose 99.9% of the radioactivity originally buried in Pits 4, 6, and 10. Also present are the following uranium and thorium isotopes: U-234, U-235, U-236, U-238, and Th-234. Other categories of radionuclides buried in pits are mixed activation products and mixed fission products (MFPs). Cobalt-60 is the mixed activation product of concern, and barium (Ba)-137, cesium (Cs)-137, strontium (Sr)-90, and yttrium (Y)-90 are the mixed fission products of concern. A summary of the radiological inventory is listed on Table 1-2 and discussed hrther in the Hazard Assessment (Section 8). This inventory is not decay corrected.

Sludge drums buried in Pits 4, 6, 9, and 10 contributed organic (e.g., carbon tetrachloride) and inorganic compounds to their contents. A summary of organic and inorganic constituents is listed in Table 8-3 and discussed hrther in Section 8. This information on waste constituents describes the nature of the waste when it was buried in Pits 4, 6, 9, and 10. No account is made for any damage or deterioration of the waste containers and their contents, decomposition of organic material, or mixing of container contents that may have occurred after the pits were closed.

1.4 Scope of Work

The OU 7-13/14 integrated probing activities will be performed to obtain material for analyses to fulfill WAG 7 RI/FS data gaps addressed in the *Work Plan for Operable Unit 7-13/14 Waste Area Group 7 Comprehensive Remedial Investigation/Feasibility Study* (Becker et al. 1996) and to meet the objectives of the *Operable Unit 7-13/14 Plan for the Installation and Logging of Probeholes in the Subsurface Disposal Area* (Becker et al. 2000). Several activities will be completed during this portion of this project. Principal activities include the following:

- Site preparation and mobilization
- Surface geophysical mapping
- Probehole installation (Types A and B)

Table 1-2. Activity for Pits 4, 6, 9, and 10 radiological inventory.[a]

Isotope	Estimated Activity in Pit 4 (Ci)	Corresponding Mass (g)	Estimated Activity in Pit 6 (Ci)	Corresponding Mass (g)	Estimated Activity in Pit 9 (Ci)	Corresponding Mass (g)	Estimated Activity in Pit 10 (Ci)	Corresponding Mass (g)
U-234	3.18E-00	5.14E+02	1.31E-00	2.12E+04	8.23E-02	1.32E+01	6.17E-00	9.97E+02
U-235	4.99E-01	2.33E+05	7.32E-02	3.42E+04	3.75E-03	1.73E+03	4.44E-01	2.07E+05
U-238	6.47E-00	1.94E+07	2.94E-00	8.83E+06	3.97E+00	1.18E+07	8.44E-00	2.53E+07
Pu-238	4.33E+02	2.51E+01	4.74E+01	2.59E+00	2.44E+01	1.49E+00	1.75E+02	1.02E+01
Pu-239	9.51E+03	1.52E+05	1.58E+03	2.53E+04	1.16E+03	1.87E+04	5.69E+03	9.10E+04
Pu-240	2.19E+03	9.46E+03	3.53E+02	1.55E+03	2.65E+02	1.17E+03	1.27E+03	5.59E+03
Pu-241	5.72E+04	5.72E+02	9.53E+03	9.53E+01	2.93E+03	2.84E+01	3.49E+04	3.49E+02
Pu-242	1.31E-02	3.33E+00	2.14E-02	5.43E+00	1.26E-02	3.20E+00	7.68E-02	1.95E+01
Am-241	2.2E+04	6.39E+03	3.66E+03	1.06E+03	2.26E+03	6.59E+02	1.33E+04	3.86E+03
Np-237	1.31E-01	1.86E+02	1.38E-02	1.96E+01	---	---	1.76E-01	2.49E+02
Co-60	1.25E+05	1.10E+02	3.42E+04	3.02E+01	5.11E-04	4.52E-07	2.25E+05	1.99E+02
Cs-137 (MAP)[b]	2.8E+04	3.24E+02	5.93E+03	6.85E+01	2.57E+00	2.97E-02	3.98E+04	4.60E+02
Sr-90 (MFP)[c]	1.7E+04	1.22E+02	5.52E+03	3.97E+01	2.33E+00	1.68E-02	1.84E+04	1.32E+02
Y-90 (MFP)[c]	1.13E+03	2.08E-03	1.23E+03	2.26E-03	2.33E+00	4.29E-06	4.37E+03	8.04E-03

a. B. H. Becker, 1998 correspondence. This inventory is not decay corrected. Radioisotopes in other areas on the SDA to be investigated are listed in Table 8-2.
b. MAPs = mixed activation products.
c. MFPs = mixed fission products.

- Downhole logging
- Sampling of Type-B probes, packaging, and shipping samples
- Periodic monitoring of Type-B probes
- Site and probe maintenance
- Overburden screening
- Diffraction tomography and seismic reflection.

There are five target areas of interest, two in Pit 4 and three in Pit 10. Iriformation from soil gas surveys and surface geophysical mapping of Pits 4 and 10 will be used in conjunction with downhole logging data to determine final probehole Type A and B locations. Soil gas surveys conducted in support of the OU 7-08 Organic Concentration in the Vadose Zone (OCVZ) Project will be used to identify areas of elevated organic vapor concentrations in the overburden soils. Surface geophysical mapping will be conducted to determine waste zone boundaries and to distinguish large discrete objects and collections of smaller objects within individual target waste zones.

Probeholes will be installed in targeted waste zones in Pits 4 and 10, as described in the OU 7-13/14 plan for installing, logging, and monitoring probeholes in the SDA (see Figure 1-3). Initial probes at the OU 7-10 site were installed in accordance with the *Work Plan for Stage I of the Operable Unit 7-10 Contingency Project* (DOE-ID 1998). Additional OU 7-10 probing activities may be addressed in Becker et al. (1996). Downhole logging activities include gamma logs and radiological profiles that will be used to site the Type B sample locations. As stated previously, Pit 6 will only be investigated if deemed necessary. The intent of the OU 7-10/13/14 probing efforts were to determine locations from which to retrieve core material from the waste and to install instruments into the coreholes. Delays and cost increases to implement the coring program in OU 7-10 has led OU 7-13/14 to investigate other means to collect the required data. Data will be collected using Type B instrumented probes. Additional areas of interest have been selected in other SDA trenches, soil vault row 17, and Pit 5. Type A and B probes will be installed in these locations.

The same sonic drill rig, remote control trailer, drilling materials, and personnel (to the extent possible) will used for all integrated probing project tasks at OU 7-10 and OU 7-13/14 locations. OU 7-13/14 integrated probing activities will be conducted in accordance with the *Operable Unit 7-13/14 Plan for the Installation and Logging of Probeholes in Pits 4 and 10 of the Subsurface Disposal Area* (Becker et al. 2000). The RWMC and OU 7-13/14 have established an interface agreement (IAG-13) that delineates OU 7-13/14 project and RWMC roles and responsibilities for project activities.

1.4.1 OU 7-10/13/14 Drilling and Downhole Logging Lessons Learned

The OU 7-10/13/14 field team has conducted extensive probe installation and logging in Pits 4, 9, and 10. Procedures and work control documents have been updated to capture lessons learned and changing requirements. These lessons learned have been documented during post-job briefings captured in this HASP, and will be discussed during training of new personnel. Section 4 discusses training hrther. Lessons learned from Type-B probe installation and sampling will be documented and discussed during daily plan-of-the-day (POD) meetings and in accordance with management control procedure (MCP)-3003, “Performing Pre-Job Briefings and Post-Job Reviews” (INEEL 2002).

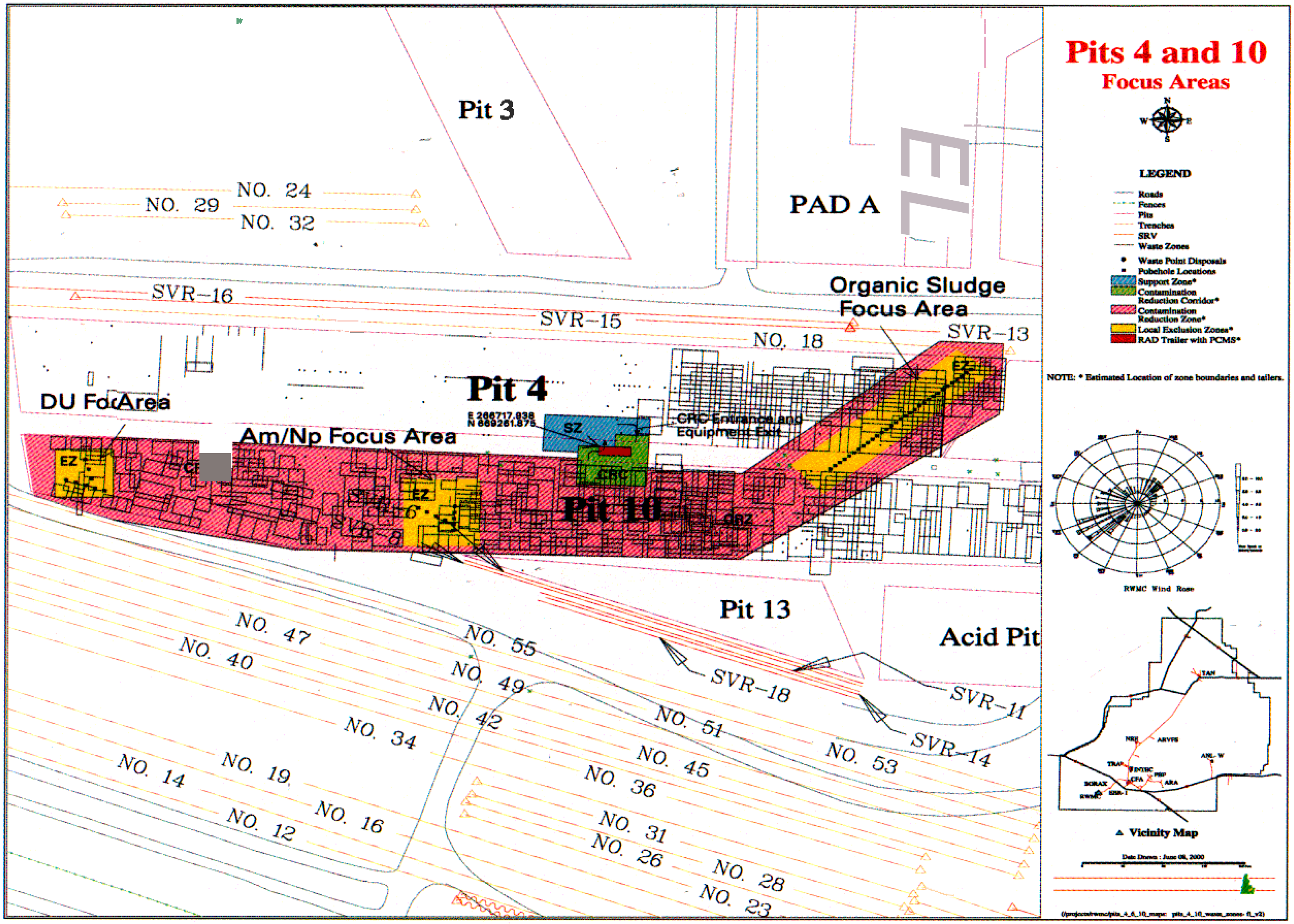

Figure 1-3. General locations for Type A probeholes in Pits 4 and 10 of the Subsurface Disposal Area.

1.4.2 Site Preparation and Mobilization

Before project personnel initiate probing mobilization activities, they will all receive project-specific training as described in Section 4. Training requirements will be based on the nature of work to be performed and location of this work (required zone access). In addition, all personnel performing work inside the exclusion zone (EZ) will be required to meet the internal dosimetry requirements identified in Section 5. All site preparation and mobilization tasks at the OU 7-13/14 integrated probing sites will be conducted in accordance with technical procedure requirement (TPR) -154, "Operational Support Activities."

Mobilization of equipment will consist of moving the drill rig, control trailer, and drilling support materials to the OU 7-10/13/14 integrated probing project site. The only intrusive tasks that will occur during site preparation and mobilization will be to anchor trailers and establish zones and designated work areas, using posts. A section of geomembrane around the probe installation location will serve as an all-weather working surface and a barrier between the overburden soil and all equipment and personnel. The geomembrane also provides a solid surface to collect radiological contamination swipes and conduct surveys. Site boundaries or "zones" will be established to ensure that project and nonproject personnel are aware of restricted and potential hazard areas. Section 7 describes these zones in detail. Operable Unit 7-13/14 probing personnel will enter the RWMC through existing main gates (by main guard gate Waste Management Facility building [WMF]-637). Access and egress from the specific project site EZ will be through the radiological control (RadCon) trailer and specified entry control points.

The RadCon trailer will be located within the SDA, next to the OU 7-13/14 probing task site area. The RWMC RadCon office (WMF-601) may serve as an alternate location. Before driving any anchors, an outage request/excavation permit will be obtained from the RWMC outage coordinator if project trailers are placed and anchored in the support zone (SZ) (Figure 7-1). Trailers serve as a project meeting area, radiological survey station (when exiting contamination reduction corridor), and instrument storage/calibration areas. The RadCon trailer will include mobile communication equipment, such as hand-held radios and a mobile phone. The WMF-657 trailer will be equipped with other administrative support equipment for integrated probing activities. All work will be conducted in accordance with MCP-3562, "Hazard Identification, Analysis and Control of Operational Activities" (INEEL 2003) RWMC work control processes, or INEEL Standard (STD)-101, "Integrated Work Control Processes."

Electrical power is supplied to the OU 7-13/14 integrated probing sites via a mining cable and series of transformers and power junction boxes located in the SDA or portable generators. If additional power resources are required, interruption of existing facilities or electrical services will be arranged with RWMC management, power management, or other applicable personnel and organizations. Additional service activities may include modifying existing roadways, ditches, electrical transmission lines and hookups, fencing, and culverts to permit personnel and equipment access through the RWMC to the OU 7-13/14 integrated probing sites.

All changes to existing drainage systems and roadways will be coordinated through the RWMC, and appropriate changes made to existing INEEL and RWMC environmental plans (e.g., RWMC Storm Water Plan). Fire protection resources and water will be supplied for probehole activities with mobile equipment. The project fire protection engineer will assess the need for additional fire protection resources. The nearest source of extinguishing water (fire hydrant DM-04) is located outside the SDA, approximately 30 m (100 ft) southeast of the OU 7-10 (i.e., Pit 9).

1.4.3 Evaluation of Existing Data

The strategy used to select locations for Type-B probes and treatability studies began with the available historical shipping and disposal records, previously collected geophysical data, and additional data from volatile organic compound (VOC) mapping to identify areas of interest and potential for high gamma radiation fields in Pits 4 and 10. This included geophysical logging data from installed Type A probes and soil gas data.

Shallow soil gas surveys have been performed on a gridded pattern within Pits 4 and 10 in support of the OU 7-08 OCVZ project to aid in the site selection of the Type-B probeholes and to increase the likelihood of obtaining RFP sludge that contain VOCs. Active soil vapor surveys have been conducted in the subsurface to locate significant masses of chlorinated hydrocarbons associated with RFP sludge and other organic waste streams. The soil gas survey has been conducted using active air extraction methods for sampling from shallow drive points. Air samples of the drive points were collected using Tedlar bags and analyzed for chlorinated hydrocarbons. Results are being provided to the OU 7-13/14 integrated probehole PM as they become available.

1.4.4 Surface Geophysical Mapping

Surface geophysical mapping was performed to define waste zone boundaries more accurately. The data provided some control on the distribution of waste in the x- and y- plane, which will complement z-component information obtained from geophysical logging. A suite of high-resolution geophysical surveys, including magnetic field, time domain electromagnetic induction, frequency domain electromagnetic induction, and seismic refraction, have been performed and were used to select Types A and B probes identified in the *Operable Unit 7-13/14 Plan for the Installation and Logging of Probeholes in Pits 4 and 10 of the Subsurface Disposal Area* (Becker et al. 2000).

Waste disposal records have been used to site probehole locations and have been supplemented with soil gas surveys and surface geophysical mapping data. Type A (large diameter) probes are being installed to allow for geophysical logging tasks, while Type B (instrumented) probes will be installed to support the WAG 7 RI/FS by allowing monitoring and sampling of the waste region. The exact location of the Type-B probes will be determined following logging of the Type A probes. All probes will be installed through targeted waste zones as described in Becker et al. (2000).

Type A probing activities will be conducted in accordance with TPR-1760, "Probehole Installation" (INEEL 2002). Type B probes will be installed in accordance with TPR-1672, "Type B Probe Installation" (INEEL 2002) and TPR 1673 (INEEL 2002), "Type B Visual Probe Installation." Type B probes will be sampled following the *Field Sampling Plan for Monitoring of Type-B Probes for the Integrated Probing Project Operable Unit 7-13/14* (Salomon 2001). Probes shall be driven to allow for maximum advancement with the least disturbance to subsurface soils. The drill rig will be operated remotely from a control trailer and unsheltered field workers (e.g., drill helpers, radiological control technicians [RCTs]), and industrial hygienists [HIs]) will be a minimum of 15 m (50 ft) from the drill string during probing tasks, in accordance with TPRs-1760, -1672, and -1673.

Video cameras will be mounted on the drill rig to enable the operator to view the drill rig on monitors positioned in the control trailer. Direct communication with the drill helpers, RadCon personnel, and the FTL will be achieved using the radio communication base station and individual headsets. All radio communication will be clear and concise, as required by MCP-2976, "Chapter IV, Operations Communications" (INEEL 1999).

1.4.4.1 Type A Probes. The installed probehole casing will be 12 cm (5 in.) inside diameter of high-carbon steel and have a disposable point or truncated point to advance the probehole. Probeholes will be installed through the overburden, waste, and underburden to the top of basalt (a depth estimated to range from 3 m to more than 5.5 m [10 ft to more than 18 ft]) and be left in place and completed with a threaded plug until the downhole logging tasks are completed. If a probehole must be abandoned because of refusal, an additional probehole may be installed in a nearby location, in accordance with the restrictions and technical safety requirements identified in TPR-1760. The proximity of probeholes will be limited to 1.5 m (5 ft) edge-to-edge unless probeholes are completed with sand, or equivalent material, or other methods approved by the project criticality safety engineer in accordance with the current technical safety requirements. As previously mentioned, Pit 6 is included only as a contingency pit and most likely will not be investigated. The following three general focus areas will be investigated during this phase of the OU 7-13/14 probehole investigation:

- Depleted uranium
- Organic sludge focus area (Series 743 sludge)
- Am/Np focus area (Series 741 sludge)
- Trenches 3, 22, 24, 47, and 54
- Soil vault rows
- Area between Pits 1, 2 and 3

Additional focus areas or SDA locations may be selected based on downhole logging results or Type-B probe sampling data.

1.4.5 Downhole Logging

Following Type A probe installation, downhole-logging tasks will be conducted to hrther define RFP waste and sludge zones of interest for locating Type-B probes. Probehole logging will be performed to investigate waste conditions as a function of depth. These activities will be conducted in accordance with INEEL Plan (PLN)-493, "Downhole Logging" (INEEL 2000), approved subcontractor logging procedure, and a STD-101 work package (INEEL 2002), or INEEL technical procedure. Logging data is also being used to select additional Type A locations.

Nuclear logging methods are hrther described in Subsection 4.3.1.2 of the *Work Plan for the Operable Unit 7-13/14 Waste Area Group 7 Comprehensive Remedial Investigation/Feasibility Study* (DOE-ID 1998) and *Operable Unit 7-13/14 Plan for the Installation and Logging of Probeholes in Pits 4 and 10 of the Subsurface Disposal Area* (Becker et al. 2000). Additional logging techniques associated with the advance borehole probe development project may be utilized in OU 7-13/14 integrated probing project locations (such as the Gamma Spectroscopy Logging System [GSLS]). This would use a neutron generating device and detector to quantify specific waste constituents. All neutron generator tasks will be conducted in accordance with MCP-138, "Control And Registration of Radiation-Generating Devices" (INEEL 2001).

Probehole threaded plugs will be removed and the selected logging tool positioned over the probehole with the logging truck hydraulic arm or a tripod/sheave assembly (if the logging truck hydraulic arm cannot be positioned directly over the probehole). The selected tool then will be lowered using the logging truck winch system at the desired rate to obtain data from the detector. When each probehole has been logged, the tool will be raised and surveyed for contamination (as deemed appropriate by RadCon). After the logging tool is completely removed, the probehole threaded-plug will be placed back on the cased probehole.

The logging vehicle and an assortment of tools and detectors will be used to log installed, cased probeholes as described above. Tools to be used will consist of both active and passive detectors. The neutron source for activated logging tasks may consist of a sealed source. Additionally, a verification source may be used daily as part of the overall logging calibration and quality control process. The MCP-137, "Radioactive Source Accountability and Control" (INEEL 2002), will be followed for all source handling and storage operations. If any sealed source is determined to be special nuclear material, it will be handled and stored accordingly. An RWMC RadCon representative, or designated project personnel, will serve as the source custodian when it is not in use. All radioactive sources will be shipped in accordance with 49 CFR 171 through 177.

Direct communication between the logger, logging technician, FTL, and support personnel will be achieved using direct verbal communication (when possible), radio communication, or hand signals. All communication will be clear and concise, as required by MCP-2976 (INEEL 1999).

1.4.5.1 Type-B Probes. Instrumented probe types (Type B) that have been installed in the SDA include the following. :

- Vaporports
- Tensiometers
- Moisture probes
- Lysimeters
- Visual probes.

Two documents, *Operable Unit 7-13/14 Plan for the Installation and Logging of Probeholes in Pits 4 and 10 of the Subsurface Disposal Area* (Becker et al. 2000) and the *Field Sampling Plan for Monitoring of Type-B Probes in Support of the Integrated Probing Project Operable Unit 7-13/14* (Salomon 2001) contain (1) a detailed description of each Type-B probe, (2) instrument capabilities, (3) the strategy used to select the location, number, and depth of instruments, (4) the construction of the instruments, (5) the installation of the instruments, and (6) the strategy to determine the sampling frequency.

Type B instrumented probehole activities will be performed following the review of results from Type A probing and soil gas surveys. Planning for the Type B probing is primarily for Pits 4 and 10. Type B probes also will be installed in Trenches 3, 22, 24, 47, 54, Pit 5, soil vault rows, and the area between Pits 1, 2, and 3. Other potential locations may address (1) an additional, suspected, depleted uranium source in Pit 5, (2) activated metal source of C-14 in soil vault row 17, and (3) possibly a beryllium reflector block disposal location in soil vault Row 20. Additionally, Type-B probes may be installed in Pit 9. Figure 1-4 provides an illustration of Type-B probe clustering.

The exact location of the Type-B probes will be based on the final results of Type A probing and logging and provided in the *Field Sampling Plan for Monitoring of Type-B Probes in Support of the Integrated Probing Project Operable Unit 7-13/14* (Salomon 2001). Installation, sampling, and monitoring technical procedures will be used for all Type B activities.

1.4.5.2 Type **B** Probe Sampling. Type-B probes installed in and near SDA waste locations will be used to gather data to support the OU 7-13/14 RI/FS. The data generated by the probing and monitoring will be used to (1) refine model parameters, (2) reduce the uncertainties associated with risk estimates for risk-driving contaminants, (3) provide data to support OU 7-13/14 treatability studies, and (4) support evaluation of OCVZ alternatives. Sample data will be collected from each of the Type-B probes as described below, and in accordance *Field Sampling Plan for Monitoring* ***of*** *Type B Probes in Support* ***of*** *the Integrated Probing Project Operable Unit 7-13/14* (Salomon 2001).

1.4.5.2.1 Vapor Ports — Commercially available vapor ports are being used to sample soil gas from the waste zones and area surrounding the soil vaults in the SDA. Soil gas is collected through a small, porous section of a rod attached directly behind a drive tip. The probe is pushed into place and will be left as a permanent installation. Soil gas samples are transported to ground surface, through tubing inside the rod, by applying a vacuum to the tube. After installation, the sample tube is terminated at ground surface with a fitting so the port can be accessed. *OU 7-13/14 Integrated Probing Project Vapor Port Instrumented Probe* (Anderson 2001) describes the specifications to install vapor ports, as for this investigation.

1.4.5.2.2 Tensiometers — A push tensiometer is a long, cylindrical tube with a porous stainless steel section, connected to a drive point at the bottom, for penetration through the soil and waste. A tube connects to the porous steel section and allows access at the surface. Water is poured down the access tube into and above the porous cup. A pressure transducer is located above the water reservoir.

When the tensiometer is placed in unsaturated soil, water in the tool equilibrates with soil water in the surrounding medium. During equilibration (which may require several days), water will be drawn from the tensiometer into the surrounding formation and a change in pressure head will occur in the tensiometer. The pressure transducer will measure the vacuum in the air/water column within the tensiometer (which is in equilibrium with the surrounding medium) to determine the matric potential of the surrounding medium.

1.4.5.2.3 Moisture Probe — The soil moisture probe indirectly measures the moisture content of soils by using the relationship between the soil dielectric constant and the moisture content. The soil moisture probe is connected to a data logger, using a wire lead, where measurements are stored and downloaded periodically. The tube is sealed so there is no pathway from the sensing element to land surface. Only the data logger will be accessed for downloading. *OU 7-13/14 Soil Moisture Probe Design* (Anderson 2001) describes the specifications of the soil moisture probes installed for this investigation.

7.4.5.2.4 Lysimeters — Suction lysimeters are designed to collect soil water samples under either saturated or unsaturated conditions. To collect water, a partial vacuum is applied on the porous section of the lysimeter (porous stainless steel with a 0.2-micron pore size) that is in contact with the soil, and soil water is drawn into the lysimeter body. Water is removed from the suction lysimeter by applying positive pressure to the suction lysimeter, which pushes the collected water up a tube to the surface and into a sample container. The amount of water collected and duration of collection is dependent on the available soil moisture, soil water potential, conductivity of the porous material in the lysimeter, and the vacuum applied.

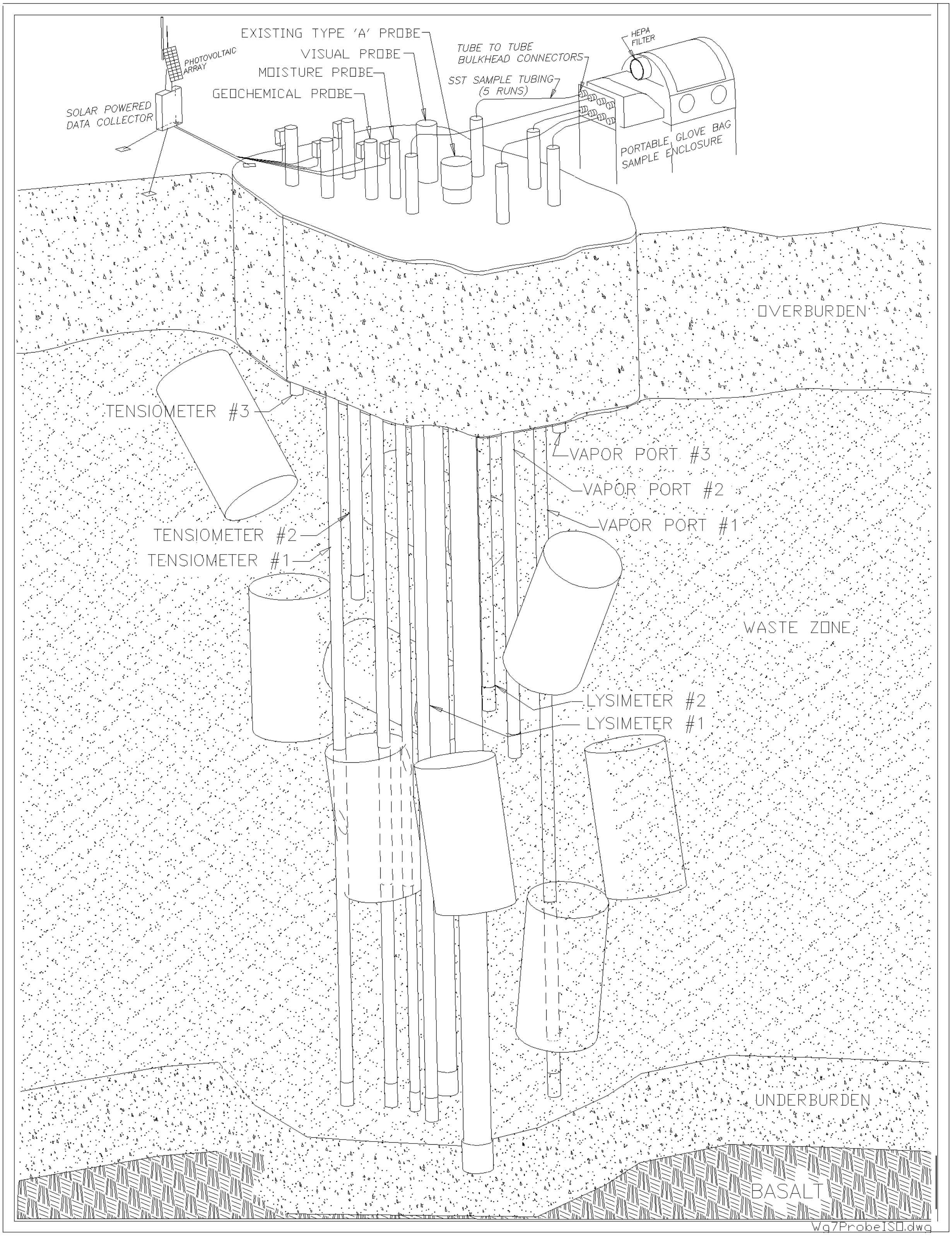

Figure 1-4. General placement of Type-B probe clusters.

The push suction lysimeter used for the integrated probing project will be approximately 5 cm (2 in.) in diameter. The outside portion of the push suction lysimeter will be the same as the push tensiometer and will consist of a long, cylindrical tube with a porous stainless steel section, attached to a drive point at the bottom, for penetration through the soil and waste. A pipe connects to the porous steel section and provides a conduit and protection for air and water lines that extend to the surface. The water line extends from the bottom of the lysimeter point to the surface. The airline is above the water reservoir, and also extends to the surface. To operate the lysimeter, the water line is closed and a vacuum is applied to the lysimeter via the airline, which is then closed off by a valve. The lysimeter collects the soil water, decreasing the vacuum as water moves into the reservoir. *OU 7-13/14 Lysimeter Probe Design* (Clark 2001) describes construction and design specifications of the suction lysimeters installed for this investigation.

1.4.5.2.5 Visual Probe — Visual probes consist of Lexan tubes that allow visual logging devices (i.e., video cameras) to be lowered down through them to allow visual confirmations related to the environment in and beneath the waste zone. The Lexan tubes are resistant to chemical attack. Being able to visually inspect the tubes and their integrity allows the unique opportunity to monitor the status of the tubes and to plan to abandon them in place should they appear to be approaching failure. Engineering Design File (EDF)-ER-237, "OU 7-13/14 Visual Probe Design," describes the construction and design specifications of the visual probes installed for this investigation.

1.4.6 Subsurface Disposal Area Overburden Screening

SDA overburden screening has been conducted in OU 7-10 (Pit 9) and may be conducted in other areas of the SDA. Overburden soil will be collected and screened to determine if areas of elevated radiological contamination exist before conducting intrusive tasks in areas to be screened. Overburden sample collection will target a depth of 3.5 ft (42 in.) from ground surface not to exceed 4 ft (48-in.). The soil will be collected using the sonic drill rig equipped with Type A casing and a cutting bit that will allow the soil to be accumulated in the casing as the drill string is advanced to the targeted depth. These operations will be conducted in accordance with an approved RWMC technical procedure.

1.4.7 Diffraction Tomography and Seismis Reflection

Diffraction tomography and seismic surface reflection geophysical tasks will be performed to provide additional subsurface geophysical data for waste interpretation in support of the SDA subsurface investigation. These geophysical methods use a seismic source in combination with a geophysical array to map subsurface features.

1.5 General Project Information

The OU 7-13/14 integrated probing project will involve a field team of five to ten individuals (see Section 2, Figure 2-1). Project personnel will consist of the drilling team, sampling team, RadCon support (engineers and technicians), health and safety professionals (i.e., HSO, industrial hygienists, (IH), safety professional [SP]), PM, and support personnel.

The current configuration of the project site will require the drill rig to be carefully moved to each location, because of existing structures and physical features (e.g., existing probes, fences, ditches, berm, roads). Every effort will be made to minimize the disturbance of adjacent structures and operations. Extensive planning during site preparation will lessen potential impact to ongoing RWMC and other SDA operations. Such planning activities may include the following:

- Prepare "National Environmental Policy Act" (42 USC § 4321 et seq.) documentation, including an environmental checklist
- Prepare the storm water pollution prevention plan
- Prepare work control documentation/integrated planning sheets
- Prepare a job safety analysis
- Prepare unreviewed safety questions
- Prepare a waste characterization report and forms L-0435, "Waste Management D&D/ER," for waste disposal, as necessary
- Prepare a fire hazards analysis based on a graded approach
- Conduct management self-assessments and other readiness assessment for select activities
- Prepare additional technical procedures

2. PROJECT MANAGEMENT RESPONSIBILITIES

The organizational structure for the OU 7-13/14 integrated probing project is divided into two functional areas, task site and ER managerial responsibilities. These areas are described in this section.

2.1 Task Site Responsibilities

The organizational structure for the OU 7-13/14 integrated probing project reflects the resources and expertise required to perform the work while minimizing risks to worker health and safety and the environment. Figure 2-1 shows task site positions and lines of responsibility and communication. The subsequent sections outline the responsibilities of these task site personnel. Table 11-4 lists the names of key individuals for emergency contact purposes.

2.1.1 Field Team Leader

The FTL represents the ER organization at the task site with ultimate responsibility for the safe and successful completion of the project. The FTL works with other field team members to execute the work plan activities (i.e., probehole plan and field sampling plan). The FTL enforces task-site control, documents attendance and activities, and may conduct or delegate the responsibility to conduct POD briefings at the start of the shift. Specific task site duties identified for the FTL, HSO, and other individuals are explicitly identified in the appropriate PLN and TPRs. Additionally, the FTL may conduct or delegate the performance of scheduled or targeted self-assessments in accordance with MCP-8, "Self-Assessment Process for Continuous Improvement," (INEEL 2002). Health and safety issues will be brought to the attention of the FTL.

When the nature of the field work requires involvement or field team staffing by RWMC equipment operators, laborers, or other crafts, a representative from the organization supplying these additional resources will interface with the FTL to provide work supervision. If the FTL leaves the task site, an alternate individual will be appointed to act as the FTL. Persons acting as FTL on the task site must meet all the FTL training requirements outlined in Section 4. The identity of the acting FTL shall be conveyed to task-site personnel and communicated to the RWMC shift supervisor **(SS)** as appropriate. The FTL will provide technical support to the RWMC command post during emergency events for the OU 7-13/14 project.

2.1.2 Health and Safety Officer

The health and safety officer (HSO) is the person assigned to the task site to serve as the primary contact for health and safety issues. The HSO advises the FTL on all aspects of health and safety, and is authorized to stop work at the task site if any operation threatens worker or public health or safety. The HSO may be assigned other responsibilities, as stated in other sections of this HASP, as long as they do not interfere with the primary responsibilities. The HSO is authorized to verify compliance to this HASP, conduct inspections in accordance with MCP-3449, "Safety and Health Inspections" (INEEL 2001), institute decontamination procedures, and require corrections, as appropriate. The HSO is supported by environmental, safety, health and quality assurance (ESH&QA) professionals at the task site (i.e., SP, IH, RCT, radiological engineer [RE], environmental compliance and facility representatives), as necessary.

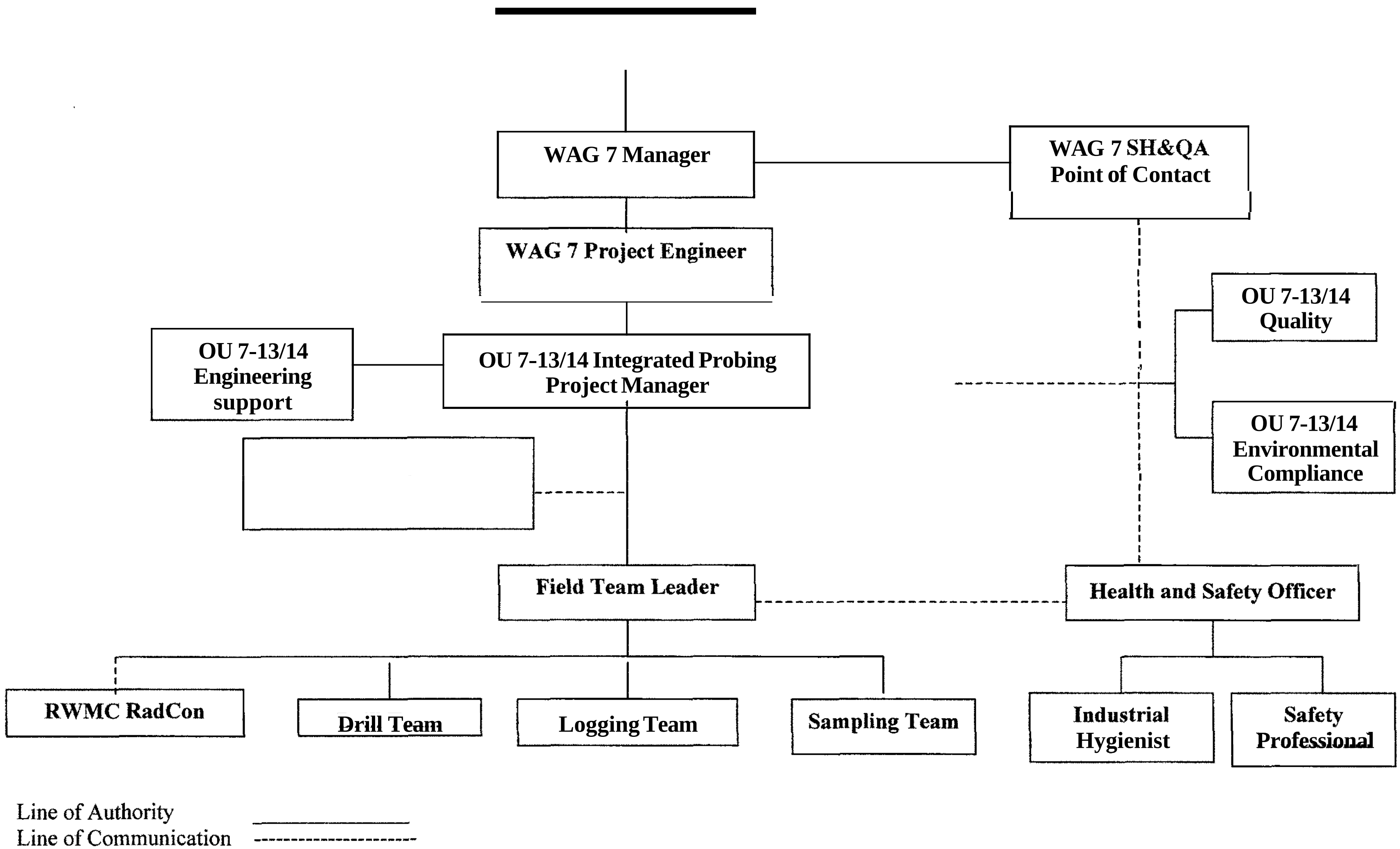

Figure 2-1. Organization chart for OU 7-13/14 project.

Persons assigned as the HSO, or alternate HSO, must be qualified (per the OSHA definition) to recognize and evaluate hazards, and will be given the authority to take or direct actions to ensure that workers are protected. While the HSO may also be the IH, SP, or in some cases the FTL (depending on the hazards, complexity, and size of the activity involved, and required concurrence from the WAG 7 ESH&QA point of contact), at the task site, other task-site responsibilities of the HSO must not conflict with the role of the HSO at the task site.

If it is necessary for the HSO to leave the site, an alternate individual will be appointed by the HSO to hlfill this role, and the identity of the acting HSO will be communicated to task-site personnel.

2.1.3 Project Environmental Compliance

The assigned OU 7-13/14 project environmental compliance person oversees, monitors, and advises the PM and FTL performing task-site activities on environmental issues and concerns by ensuring compliance with DOE Orders, EPA regulations, and other regulations concerning the effects of task-site activities on the environment. The environmental compliance person provides support surveillance services for hazardous waste storage and transport and surface/storm-water runoff control.

2.1.4 Quality Engineer

An INEEL quality engineer provides guidance on task-site quality issues, when requested. The quality engineer may observe task-site activities to verify that task-site operations comply with quality requirements. As applicable, the quality engineer identifies activities that do not comply, or have the potential for not complying with quality requirements, and suggests corrective actions. The quality engineer will prepare inspection criteria for materials procured to support the project.

2.1.5 Radiological Engineer

The RE is the primary source for information and guidance relative to evaluating and controlling radioactive hazards at the task site. The RE will provide engineering design criteria and review of confinement structures (sampling only) and make recommendations to minimize health and safety risks to task-site personnel. The RE must (1) perform radiation exposure estimates and as low as reasonably achievable (ALARA) evaluations, (2) identify the type(s) of radiological monitoring equipment necessary for the work, (3) advise the HSO and RCT of changes in monitoring or personal protective equipment (PPE), and (4) advise personnel on task-site evacuation and reentry. The RE may also have other duties to perform as specified in other sections of this HASP, or in Manual 15A, *Radiation Protection INEEL Radiological Control Manual* (INEEL 2000).

2.1.6 Radiological Control Technicians

The assigned INEEL RCTs are the primary source for information and guidance on radiological hazards and will be present at OU 7-13/14 integrated probing task sites during all operations. The RCT must (1) perform radiological surveying of the task site, equipment, and samples, (2) provide guidance for radioactive decontamination of equipment and personnel, and (3) accompany the affected personnel to the nearest INEEL medical facility for evaluation if significant radiological contamination occurs. The RCTs must notify the FTL and HSO of any reportable radiological occurrence, as directed by the Manual 15A (INEEL 2000). The RCTs may have other duties at the task site as specified in other sections of this HASP, or in INEEL program requirements documents (PRDs) or MCPs. Radiological control technicians also will make required notification to the RWMC RadCon supervisor if continuous air monitors or other instrumentation exceed alarm set points or radiological work permit (RWP) limits.

2.1.7 Industrial Hygienist

The assigned INEEL IH is the primary source for information regarding nonradiological, hazardous, and toxic agents at the task site. The IH assesses the potential for worker exposures to hazardous agents according to INEEL MCPs and accepted industry IH practices and protocol. By participating in task-site characterization, the IH (1) assesses and recommends appropriate hazard controls for the protection of task-site personnel, (2) operates and maintains airborne sampling and monitoring equipment, and (3) reviews for effectiveness and recommends and assesses the use of PPE required in this HASP (recommending changes as appropriate).

Following an evacuation, the IH, in conjunction with other recovery team members, will assist the FTL to determine whether conditions exist for safe task-site reentry, as described in Subsection 11.7. Personnel showing health effects (signs and symptoms) resulting from possible exposure to hazardous agents will be referred to an Occupational Medical Program (OMP) physician by the IH, their supervisor, or the HSO. The IH may have other duties at the task site, as specified in other sections of this HASP, or in INEEL PRDs or MCPs. During emergencies involving hazardous materials, airborne sampling and monitoring results will be coordinated with members of the Emergency Response Organization (ERO). In some cases, an IH technician may fill the IH position.

2.1.8 Fire Protection Engineer

The assigned INEEL fire protection engineer (FPE) reviews the work packages and fire hazard analysis, conducts pre-operational and operational fire hazard assessments, and is responsible for providing technical guidance to OU 7-13/14 personnel regarding all fire protection issues. Additionally, the assigned FPE may provide fire protection support for the development and review of project fire protection documentation (e.g., pre-fire plan and fire hazards analysis).

2.1.9 Safety Professional

The assigned INEEL safety professional reviews work packages, observes site activity, assesses compliance with Manual 14A, *Safety and Health, Occupational Safety and Fire Protection* (INEEL 2001) signs safe work permits (SWPs), advises the FTL and HSO on required safety equipment, answers questions on safety issues and concerns, and recommends solutions to safety issues and concerns that arise at the task site. The safety professional (SP) may conduct periodic inspections in accordance with MCP-3449 (INEEL 2001), and may have other duties at the task site as specified in other sections of this HASP, or in INEEL PRDs or MCPs.

2.1.10 Logging Team

Downhole logging tasks will be conducted by logging team personnel and specialized equipment to conduct geophysical logging. The subcontractor representative or supervisor will report to the FTL for technical issues and other logistics and administrative matters. Subcontractor representatives, along with the FTL and other field team members, work as a team to accomplish day-to-day logging and assay operations at the task site, identify and obtain additional resources needed at the site, and interact with the HSO, IH, SP, RE, and RCTs on matters regarding health and safety. The subcontractor representative or supervisor will provide information to the FTL and HSO regarding the nature of their intended tasks, hazards, and mitigation work for the daily POD meeting.

2.1.11 Sampling Team

The field sampling team must collect and prepare all Type-B probe samples. They will collect: preserve, ship, and store all samples in accordance with the field sampling plan (Salomon 2001). Sampling team members will coordinate all activities with the FTL.

2.1.12 Field Team Members

All field, INEEL, and subcontractor team members (drillers, helpers, equipment operators, and other personnel called out by position in this section) shall understand and comply with requirements of this HASP. The FTL or HSO will brief the field team members at the start of each shift. During the POD, all daily tasks, associated hazards and mitigation, engineering and administrative controls, required PPE, work control documents, and emergency conditions and actions will be discussed. Input from the project SP, IH, and RadCon personnel to clarify task health and safety requirements will be provided. All personnel are encouraged to ask questions regarding site tasks and provide suggestions on ways to perform required tasks in a more safe and effective manner based on the lessons learned from previous day's activities.

Once at the OU 7-13/14 task site, personnel are responsible for identifying any potentially unsafe situations or conditions to the FTL or HSO for corrective action.

Note: If it is perceived that an unsafe condition poses imminent danger, any field team member or other project personnel is authorized to stop work immediately, then notify the FTL or HSO of the unsafe condition.

2.1.13 Nonfield Team Personnel

All persons who will be on the OU 7-13/14 project sites to complete limited tasks (e.g., maintenance, refueling, vender service), inspections, or assessments, or do not perform required tasks at the project sites, are considered nonfield team personnel. A person shall be considered "onsite" when they are present in or beyond the designated **SZ.** Nonfield team personnel or "occasional site workers" under 29 CFR 1910.120/1926.65, must meet minimum training requirements for the area they have a demonstrated need to access at the OU 7-13/14 project site, as identified in Section 4. Nonfield workers who have a demonstrated need to routinely access the project site will be trained to a HAZWOPER 40-hour level and complete 3 days of supervised field experience, in accordance with 29 CFR 1910.120(e), in order to become a field team member.

2.1.14 Visitors

All visitors with official business at OU 7-13/14 project sites (including INEEL personnel, DOE representatives, and/or state or federal regulatory agencies) may not proceed beyond the **SZ** without meeting the following requirements:

- Receive OU 7-13/14 site-specific HASP training and sign the associated training roster
- Provide proof of meeting all training requirements specified in Section 4 for the area to be accessed
- Sign applicable radiological work permits, safe work permits, and job safety analysis for the area(s) to be accessed

- Wear appropriate PPE.

> **Note:** Visitors may not be allowed beyond the **SZ** during certain OU 7-13/14 project site tasks (e.g., probe installation, drill-rig movement, sampling, others, as determined by the HSO) to minimize safety or health hazards, or as an ALARA consideration. The determination of any visitor's "need" for access beyond the **SZ** at the OU 7-13/14 project site will be made by the FTL and HSO in consultation with RWMC RadCon personnel.

A fully trained task-site representative (such as the FTL, HSO, or a designated alternate) will escort visitors when entering the OU 7-13/14 project site beyond the **SZ.**

A casual visitor to the OU 7-13/14 task site is a person who does not have a specific task to perform or other official business to conduct at the task site.

> **Note:** Casual visitors are not permitted at OU 7-13/14 project sites.

2.2 Environmental Restoration Management Responsibilities

An overview of the direct managerial positions and lines of responsibility and communication for overseeing the OU 7-13/14 project are outlined in this section. The names of key management individuals for emergency contact purposes are listed in Table 11-4.

2.2.1 Environmental Restoration Director

The INEEL ER Director has the ultimate responsibility for the technical quality of all projects, maintaining a safe environment, and the safety and health of all personnel during field activities performed by or for the Environmental Restoration Program (ERP). The ER Director provides technical coordination and interfaces with the DOE-ID Environmental Support Office. The ER Director ensures that:

- Project and program activities are conducted according to all applicable federal, state, local, and company requirements and agreements
- Program budgets and schedules are approved and monitored to be within budgetary guidelines
- Personnel, equipment, subcontractors, and services are available, as required
- Direction is provided to develop tasks, evaluate findings, develop conclusions and recommendations, and produce reports.

2.2.2 Environmental Restoration Safety, Health, and Quality Assurance Manager

The ER SH&QA manager is responsible to manage resources to ensure that SH&QA programs, policies, standards, procedures, and mandatory requirements are planned, scheduled, implemented, and executed in the day-to-day operations for the ERP operations conducted at the INEEL. The manager directs the SH&QA compliance accomplishment of all activities by providing technical and administrative direction to subordinate staff and through coordination with related functional entities. The ER SH&QA manager reports to the ER Director. Under the direction of the ER Director, the ER SH&QA manager represents the ER Directorate in all SH&QA matters. This includes responsibility for ERP

SH&QA compliance and oversight for all ER Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and decontamination and dismantlement operations planned and conducted at the RWMC (WAG 7) and for ERP INEEL-wide environmental monitoring activities.

The ER SH&QA manager is responsible for managing the following technical disciplines and implementing programs related to these disciplines:

- RadCon personnel (matrixed)
- Industrial safety personnel
- Fire protection personnel
- Quality assurance personnel
- Industrial hygiene personnel (matrixed)
- Emergency preparedness personnel (matrixed)

2.2.3 Waste Area Group 7 Manager

The ER WAG 7 manager shall ensure that all WAG 7 activities conducted comply with INEEL MCPs and PRDs; all applicable OSHA, EPA, DOE, Department of Transportation, and state of Idaho requirements; and that tasks comply with PLN-125, the "Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites (Draft)," (QAPjP) (DOE-ID 2000b), this HASP, and the *Field Sampling Plan for Monitoring of Type-B Probes in Support of the Integrated Probing Project OU 7-13/14* (Salomon (2001). The ER WAG 7 manager is responsible for the overall work scope, schedule, and budget for all WAG 7 projects.

2.2.4 Waste Area Group 7 Project Engineer

The WAG 7 project engineer (PE) is responsible for the overall technical quality of the WAG 7 ER projects. The responsibilities of this PE include the following:

- Ensure technical content and quality of project deliverables
- Provide technical oversight, direction, and acceptance of environmental products developed by project teams and project subcontractors
- Provide project-specific point of contact services for the recruitment and destaffing of projects for scientific, technical, and engineering staff
- Be cognizant of and stay ahead of technical project issues, focusing on planning, design, and execution of tasks to ensure compliance with environmental regulations, permits, INEEL policies and DOE orders
- Maintain close coordination with other key project points of contact to maintain project schedules, milestones, and to develop action plans, as required, that meet project goals
- Coordinate and schedule formal and informal reviews of all project-produced documentation to assure scientific, technical, and engineering excellence in the delivered product

- Coordinate and plan appropriate mitigation strategies to minimize long-term impacts of tasks conducted

- Identify scientific, technical, and engineering issues that affect the cost effectiveness, constructability, and operation or maintenance of systems developed for deployment.

2.2.5 OU 7-13/14 Integrated Probing Project Manager

The INEEL OU 7-13/14 integrated probing PM is responsible for the scope, schedule, and budget for these activities. Also, the PM must interface with and support the INEEL WAG 7 manager for tracking purposes. The OU 7-13/14 integrated probing PM shall ensure that all activities conducted during the project comply with the project procedures, applicable INEEL MCPs and PRDs, and all applicable OSHA, EPA, DOE, Department of Transportation, and State of Idaho requirements. The PM shall ensure that tasks comply with INEEL PLN-125 (INEEL 1997), the Quality Assurance Project Plan (DOE-ID 2000b), this HASP, and the project FSP (Salomon 2001). The OU 7-13/14 integrated probing PM coordinates all document preparation, field, laboratory, and modeling activities.

The OU 7-13/14 integrated probing PM interfaces with RWMC management to implement the project requirements and ensure work is performed as planned for the OU 7-13/14 integrated probing project. This PM is responsible to (a) develop resource-loaded, time-phased control account plans based on the RWMC Remediation Project technical requirements, budgets, and schedules; and (b) assign OU 7-13/14 integrated probing project tasks.

2.2.6 Radioactive Waste Management Complex Facility Interface

The person assigned as the RWMC interface is responsible for implementing the OU 7-13/14 project-RWMC interface agreement (IAG-13) and working with the OU 7-13/14 integrated probing PM to ensure all required RWMC resources are in place to meet the project requirements. The RWMC facility interface person may be assigned additional tasks by the OU 7-13/14 integrated probing PM and may attend RWMC POD meetings as a project representative.

3. RECORD-KEEPING REQUIREMENTS

3.1 Industrial Hygiene and Radiological Monitoring Records

The IH (or IH technician) will record airborne monitoring and sampling data (both area and personal) on the INEEL Hazards Assessment and Sampling System (HASS). All monitoring and sampling equipment shall be maintained and calibrated per INEEL procedures and the manufacturer's specifications. Industrial hygiene airborne monitoring and sampling data is treated as limited access information and maintained by the IH procedures, in accordance with Manual 14B, *Safety and Health, Occupational Safety and Fire Protection* (INEEL 2003).

The RCT maintains records of all radiological monitoring, daily task-site operational activities, air samples, surveys, and instrument calibrations. Radiological monitoring records are maintained according to Manual 15A (INEEL 2000) procedures.

Industrial hygienist and RCT monitoring and sampling (both area and personal) data will be made available to task-site personnel or their representative upon request.

3.2 Field Team Leader Logbook

The FTL will keep a record of daily task-site events in the FTL logbook. The FTL logbook must be obtained from ER Administrative Record and Document Control (ARDC). Completed logbooks are submitted to ARDC along with other documents at the project's completion. Logbooks will be maintained in accordance with MCP-231, "Logbooks."

3.3 Site Attendance Record

This site attendance record will be used to keep a record of all personnel (workers and nonworkers) who are onsite each day and be used to assist the area warden to conduct personnel accountability should an evacuation take place (see Section 11 for emergency evacuation conditions). Personnel will be required to sign in and out of the attendance record only once each day. The FTL is responsible for maintaining the site attendance record and ensuring all personnel on the project site sign in.

3.4 Administrative Record and Document Control Office

The ARDC shall organize and maintain data and reports generated by ER program field activities. The ARDC maintains a supply of all controlled documents and provides a documented system for the control and release of controlled documents, reports, and records. Copies of the management plans for the ER program, this HASP, the PLN-125 (INEEL 1997), the QAPJP, and other documents pertaining to this work are maintained in the project file by the ARDC. All project records and logbooks, except IH and RCT records, must be forwarded to ARDC within 30 days after of field activities are completed.

4. PERSONNEL TRAINING

All OU 7-13/14 integrated probing project site personnel shall receive training as specified in OSHA 29 CFR 1910.120/1926.65, the INEEL safety and health manuals, *INEEL Training Requirements Matrix Manual*, Manual 12, *Training and Qualification* (INEEL 2001), and MCP-1764, "RWMC Operating Requirements" (INEEL 2002). Table 4-1 summarizes the project-specific training requirements for task-site personnel based on position and required access into the specific areas at the task site. Specific training requirements for each worker may vary depending on the hazards associated with their individual job assignment and required access into radiologically controlled areas. Changes to the training requirements listed on Table 4-1 (adding or eliminating) may be necessary based on changing field conditions or work scope. Any changes to those listed on Table 4-1 must be approved by the HSO with concurrence from the FTL, PM and RadCon (as applicable).

4.1 General Training

All project personnel must meet required OU 7-13/14 training (including applicable refresher training) and evidence of training will be maintained at the OU 7-13/14 project site or electronically (e.g., Training Records and Information Network [TRAIN]) at the OU 7-13/14 administrative trailer. Nonfield team personnel and visitors must be able to provide evidence of meeting required training for the area they wish to access before being allowed into controlled project areas. Examples of acceptable written training documents include the following:

- 40-hour OSHA HAZWOPER Card
- Respirator Authorization Card
- DOE Certificate of Core Radiological Training II Card
- Medic/First Aid Training Card
- A copy of an individual or department's (INEEL only) TRAIN system printout, demonstrating completion of training.

Upon validation, a copy of the training certificate issued by an approved, non-INEEL training vender or institution is also acceptable proof of training. The DOE radiological worker training must be documented on an official authorized card and have the designated INEEL site-specific training stamped or written on the card.

4.2 Project-Specific Training

Before beginning work at the OU 7-13/14 project sites, project-specific HASP training will be conducted by the HSO or designee. This training will consist of a complete review of a controlled copy of the project HASP and attachments, applicable job safety analyses (JSA), SWPs (if required), TPRs and other applicable work control/authorization documents, with time for discussion and questions. Project-specific training can be conducted in conjunction with, or separately from the required, formal, prejob briefing, in accordance with MCP-3003, "Performing Pre-Job Briefings and Post-Job Reviews" (INEEL 2002).

At the time of project-specific HASP training, personnel training records will be checked and verified to be current and complete for all required training shown in Table 4-1. Once the HSO or designee has completed site-specific training, personnel will sign a Form 361.25, "Group Read and Sign Training Roster," or equivalent, indicating that they have received this training, understand the project tasks and associated hazards/mitigation, and agree to follow all HASP and all other applicable work control and safety requirements.

Note: Form 361.47, "Group Read and Sign Training Roster," or equivalent training forms, are available on the INEEL Intranet under "Forms".

A trained HAZWOPER 8-hour supervisor (FTL or other HAZWOPER supervisor trained person) will monitor each newly 24-hour or 40-hour trained worker's performance to meet the one day or three days of supervised field experience, respectively, in accordance with 29 CFR 1926.65(e). Following the supervised field experience period, the supervisor will complete a Form 361.47, "HAZWOPER Supervised Field Experience Verification" or equivalent, to document the supervised field experience.

Note 1: Supervised field experience is only required if personnel have not previously completed this training at another CERCLA site (documented) or if they are upgrading from 24-hour to 40-hour HAZWOPER training. A copy must be kept at the project site as evidence of training or be available electronically.

Note 2: Completed training project forms (Form 361.47 or equivalent) must be submitted to the ER training coordinator for inclusion in the TRAIN system within 5 working days of completion.

4.3 Daily Plan of the Day and Lessons Learned Meeting

The FTL, or designee, will conduct a daily POD meeting with other field team members contributing (HSO and RCT, as applicable). During this meeting, daily tasks are to be outlined, hazards identified, hazard controls/mitigation and work zones reviewed, PPE requirements discussed, and employees' questions answered. At the completion of this meeting, any new work control documents will be read and signed (e.g., SWPs, RWPs, JSAs). Particular emphasis will be placed on lessons learned from the previous day's activities and how tasks can be completed in the safest, most efficient manner. All personnel will be asked to contribute ideas to enhance worker safety and mitigate potential exposures at the project sites. This POD will be conducted as an informal meeting and the only required record will be to document completion of the POD in the FTL logbook.

Table 4-1. Required training for OU 7-13/14 integrated probing project site personnel.

Training	Field Team Leader	Radiological Control Technicians, Industrial Hygienist Samplers	Driller Helpers	Health and Safety Officer, Safety Professional, Radiological Engineer	Drill Operator, Logging Team	Access Beyond the Safety Zone	Access to Safety Zone Only (Inside the Subsurface Disposal Area)
40-hr HAZWOPER[a,b]	Yes	Yes	Yes	Yes	Yes	---	---
24-hr HAZWOPER[c]	---	---	---	---	---	Yes	Yes
8-hr HAZWOPER Refresher[d]	Yes	Yes	Yes	Yes	Yes	---	Yes
HAZWOPER supervisor	Yes	---	---	HSO	---	---	---
Project-specific HASP training[e]	Yes	Yes	Yes	Yes	Yes	---	Yes
RW I (INEEL site-specific)[f]	---	---	---	---	---	---	Yes[c]
RW II (INEEL site-specific)	Yes	Yes	Yes	HSO/SP	Yes	Yes[f]	---
Fire watch or equivalent[g]	Yes	---	Yes	HSO	---	---	---
CPR/medic first aid[g]	Yes	---	Yes	HSO	---	---	---
Respirator training (full-face)	h	h	h	h	---	---	---
HAZMAT employee general awareness	---	Samplers	---	---	---	---	---
Glove bag installation/removal	Yes	Samplers	---	---	---	---	---
RWMC area warden training	Yes	---	---	HSO	---	---	---
RWMC access training	Yes	Yes	Yes	Yes	Yes	Yes[c]	Yes[c]

a 40-hr HAZWOPER required training will also include an additional 24 hours of HAZWOPER supervised field experience as required by 29 CFR 1910.120(e). Field experience for this project will be documented on Form 361.47, "HAZWOPER Supervised Field Experience Verification" (or equivalent form).

b. Minimum requirements for unescorted EZ access (HSO approval also required).

c. Minimum requirement for unescorted RWMC SDA access or must be escorted by fully trained individual.

d. As required, based on initial HAZWOPER training date. Must be completed or scheduled by HAZWOPER training anniversary date.

e. Includes project-specific HAZCOM, site-access/security, decontamination and emergency response actions, as required by 29 CFR 1910.120(e).

f. RW II required for all field team members and samplers. Others may be escorted as deemed appropriate by RWMC RadCon.

g. At least one trained person on site when field team is working.

h. Full-face protection if entering area requiring respiratory protection.

CP = command post CPR = cardiopulmonary resuscitation EZ = exclusion zone HASP = health and safety plan HAZCOM = hazard communications HAZMAT = hazardous materials HAZWOPER = hazardous waste operations HSO = health and safety officer RW = radiological worker RWMC = Radioactive Waste Management Complex SDA = Subsurface Disposal Area SP = safety professional SZ = support zone